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INTEROFFICE MEMORANDUM

Date: December 2, 1964

To:

From: [redacted]

Subject: A New Transport and Agitation Technique For Processing Photographic Papers in Rolls or Sheets of Any Length or Width

Title

Several months ago I conceived an idea which I believe can be developed into a unique technique for processing photographic materials. At the present time this technique is more suitable for the processing of paper but with some limitations could also be used for processing film.

In its simplest form, a sheet of photographic paper would be processed in a series of adjacent vertical tanks as shown in Fig. 1. Attached to the inner side walls of each tank would be a sheet of corrugated plastic or stainless steel as shown in Fig. 2. (As an alternative the tanks could be constructed using this corrugated material for the two side walls). To transport the paper through each tank, a chain driven roller - belt assembly would be used in each tank as shown in Fig. 3. The e, assemblies would be lowered into each tank between the sheets of corrugated material.

The sheet of paper to be processed would be inserted into the first tank between the moving belt and the stationary corrugated materials, with the emulsion towards the corrugations. The action of the belt would then transport the paper down one side of the tank and up the other. Curved plastic or stainless guides at the bottom of the tank would direct the leading edge of the paper around the lower roller. When the leading edge of the paper emerged from the first tank it would be directed into the second tank by another curved guide. Figure 4 is a side view showing a sheet of paper being inserted for processing. Also shown are the guides mentioned above.

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To insure good contact between the belt, the paper, and the corrugated side walls, it will probably be necessary to construct the roller - belt assembly as shown in Figure 5. The shaded area of this Figure representing a solid sheet of material which would insure the required contact between the belt and the paper. (It can be seen then that the main part of the roller-belt assembly could consist of a simple hollow box-like structure).

Proper choice of the belt material should prevent slippage between the paper and the belt, however, as an added precaution the outer surface

of the belt could consist of thousands of very small finger-like protrusions.

Slippage between the belt and the drive roller or rollers (it may be necessary to drive only the upper roller in each tank) will also have to be prevented. This could be accomplished in a number of ways and should present no special problems. For example, the inner surface of the belt and the outer surface of the drive roller could be ridged and grooved to provide the required friction.

With the hardened emulsion of todays photographic papers scratching caused by contact between the emulsion and the smooth plastic corrugated material should not be a problem. For processing film, however, the corrugated material may have to be covered with a velvet-like material.

The advantages of this technique are listed below:

1) The basic design is extremely simple. Because of this the cost of materials and fabrciation should be low.

2) Because each tank has its own drive belt any number of individual tanks can be combined to provide for:

    a. rapid processing
    b. conventional black and white processing
    c. black and white reversal processing
    d. color processing (either negative or reversal)

3) Because the emulsion is being continuously wiped by the corrugations the agitation should be extremely efficient and uniform, and should require no pumps for solution recirculation.

4) Washing and forced air drying could be accomplished by this technique. In the drying tank the corrugated material could be used to form air bearings to prevent contact with the emulsions. (See Fig. 6). As an alternative to tank drying, a drum-type drier could be positioned next to the wash tank. A plastic or metal guide would direct the print directly onto the drier belt.

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PROPOSED PAPER PROCESSOR

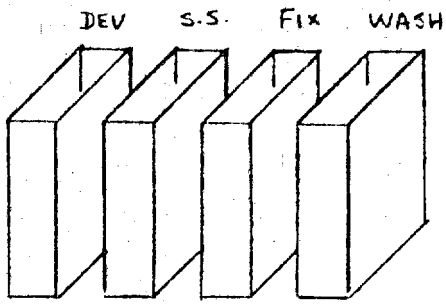

FIG. 1

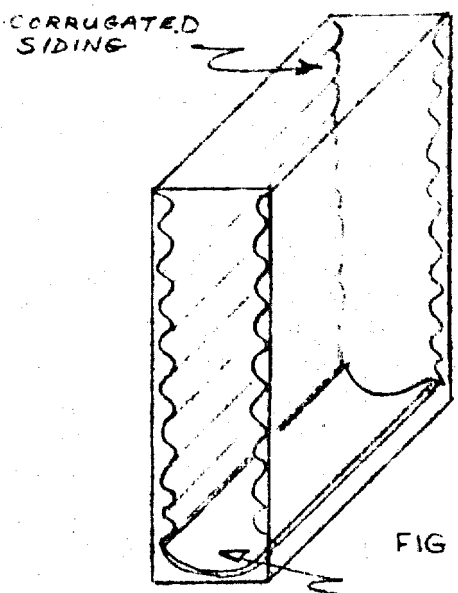

FIG 2

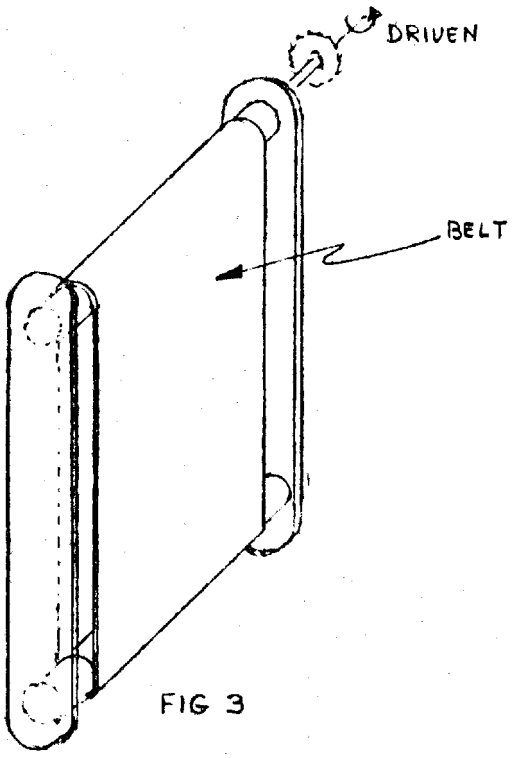

FIG 3

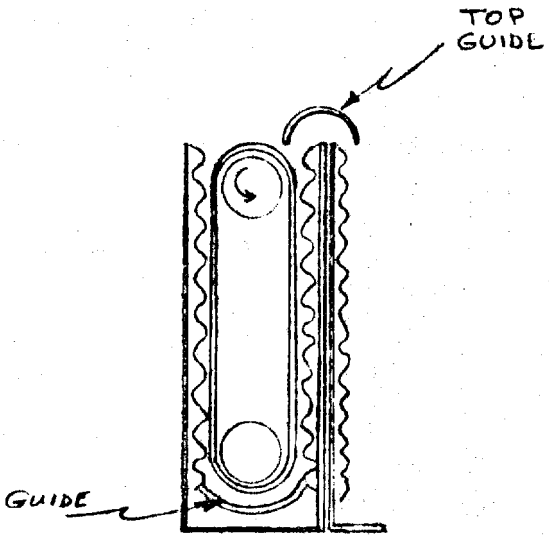

FIG 4

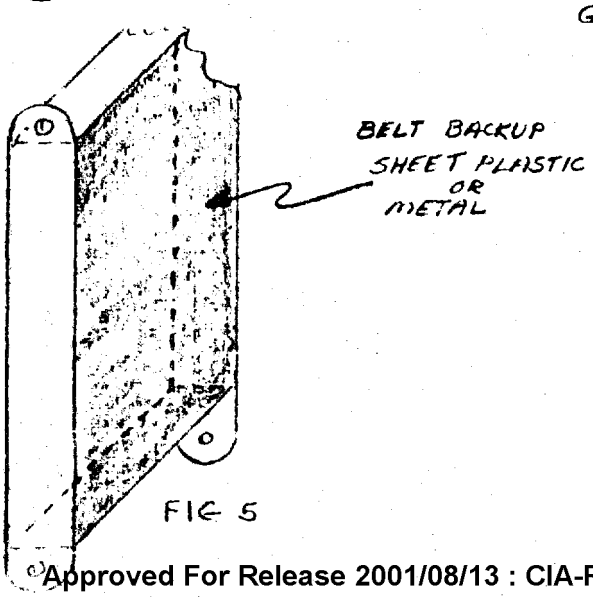

FIG 5

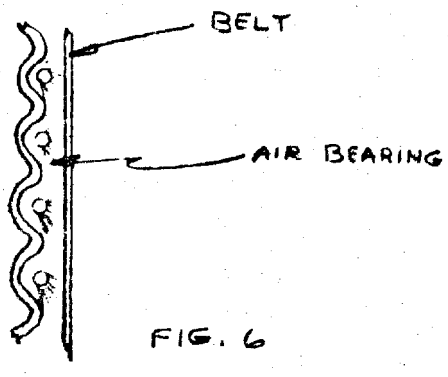

FIG. 6

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